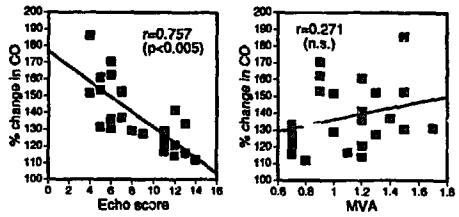
Results: Multiple regression analysis revealed that dobutamine-induced % change in CO significantly correlated with the echo score ($r = 0.757$, $p < 0.005$) but not with age, gender, rest heart rate, rest stroke volume and MVA.



Conclusion: The echo score that represents the mitral valve morphological changes is used to predict the success of balloon mitral valvotomy. In addition, this study demonstrated that the echo score might be a valuable predictive parameter to regulate the increase in CO during dobutamine infusion and the patient's ability to exercise.

980 Cardiac Surgery Poster IV: The Maze Procedure

Tuesday, March 26, 1996, 3:00 p.m.–5:00 p.m.
Orange County Convention Center, Hall E
Presentation Hour: 4:00 p.m.–5:00 p.m.

980-77 Restoration of Atrial Mechanical Function After Maze Operation: Is It Affected by the Same Factors as the Restoration of Sinus Rhythm?

Yong-Jin Kim, Dae-Won Sohn, Young-Bae Park, Yun-Shik Choi, Jung-Don Seo, Young-Woo Lee, Ki-Bong Kim, Joon-Ryang Rho. *Seoul National University Hospital, Seoul, Korea*

Maze operation is aimed for the *restoration of sinus rhythm* (RSR) and *atrial mechanical function* (RAF). But RAF has not been demonstrated in all patients(pts) with RSR. From Apr. 1994 to Mar. 1995, maze operations were performed in 19 pts(M:F = 6:13, mean age 47.1 ± 10.7 years) combined with mitral valve surgery(n = 17), aortic valve replacement (n = 1) or VSD patch closure (n = 1). Sinus rhythm was restored immediately after operation in 18/19 pts(95%) and was maintained by 6 month in 15/19 pts(80%). Four pts without RSR were older (58.0 ± 9.2 vs 44.1 ± 9.1 years, $p < 0.05$) and had larger LA size (61.6 ± 5.7 vs 51.0 ± 8.4 mm, $P < 0.05$). In 17 pts with available Af duration, all pts without RSR (n = 4) had Af duration of more than 5 years(pts with RSR: 5/13, $p < 0.05$). But there were no differences in the presence of f-wave by doppler echocardiography(df) and f-wave voltage in EKG(ef). RAF was demonstrated in 14/15 pts (93%) on the tricuspid inflow (TI) while only in 8/15 pts (53%) on the mitral inflow (MI). Peak A velocity and A/E ratio were 0.45 ± 0.15 m/s, 0.69, respectively on TI and 0.47 ± 0.07 m/s, 0.39, respectively on the MI. MI peak A velocity and A/E ratio were significantly lower than the 9 control postoperative pts (0.79 ± 0.14 m/s, 0.94 ± 0.27 :$P < 0.01$, both). There were no significant differences in the duration of Af, LA size, df and ef between the pts with and without RAF.

Conclusions: While young age, short duration of Af and small LA size favorably affect the RSR, RAF could not be predicted by the same variables. Even in patients with RAF, RAF was incomplete.

980-78 Is the Maze Procedure Safely Combined With Mitral Valve Repair?

Hiroshi Izumoto, Kohei Kawazoe, Masayuki Mukaida, Tatsuya Sasaki, Takayuki Nakajima, Osamu Okada, Junya Kamata, Yoko Yagi. *Third Department of Surgery, Iwate Medical University, Morioka, Iwate, Japan*

To determine the operative risk of addition of maze procedure (Maze) to mitral repair, perioperative variables, mortality, and morbidity are retrospectively reviewed. From 1993 to 1994, 39 patients underwent a combined procedure (Maze + mitral repair) (Group 1; n = 39) In the same period, 36 patients with sinus rhythm and one patient with DDD pacemaker underwent mitral repair (Control; Group 2; n = 37). Mean age in Group 1 was 60.7 years and 55.4 in Group 2. Cardiopulmonary bypass time and aortic cross-clamp time in Group 1 were significantly longer. Intraoperative blood loss, intubation period, and duration of ICU stay were not different. No operative deaths occurred in both groups. Four patients required re-exploration in Group 1 and two in Group 2 (NS). Two patients required pacemaker implantation in Group 1 and none in Group 2 (NS). Thirteen of Group 1 patients (33%) developed atrial arrhythmias during hospitalization and seven of Group 2 patients (19%) developed atrial arrhythmias (NS). At hospital discharge, 28 patients in Group 1 (72%) were in sinus rhythm and 35 patients in Group 2 in sinus rhythm. Doppler echocardiography was performed in Group 1 to assess atrial transport function Atrial transport function was confirmed in 21 patients (58%). The result suggests that Maze can be safely combined with mitral repair. Considering the benefits from addition of Maze, combined procedure may be advised for patients undergoing mitral repair, if indicated. The long-term results of this combination need to be defined.

980-79 The Influence of Perfusion Area and Graft Material on the Flow Velocity of Coronary Artery Bypass Graft

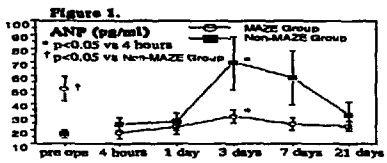
Hiroshi Sato, Masao Okamura, Keiji Kurogane, Yoshio Takeuchi, Takashi Kajiura. *Takatsuki General Hospital, Osaka, Japan*

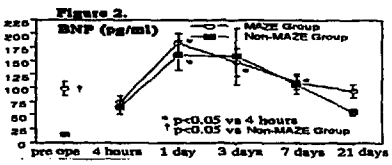
The purpose of this study is to evaluate hemodynamic effects of perfusion area and graft material on flow velocity of coronary artery bypass graft. Flow velocity was measured in 50 grafts using a Doppler guide wire in the graft and in the native coronary artery distal to the anastomosis. Coronary flow reserve(CFR) was also obtained in the native artery by infusion of papaverine into the graft. Grafts were divided into two groups according to the perfusion area. On angiography, 29 grafts perfused two or more branches (Group I: large perfusion area), and 21 grafts perfused only one branch (Group II, small perfusion area). Flow velocity data and CFR were compared between two Groups. Additionally, in each group, they were compared between the arterial graft (ITA) and the vein graft (SVG). In the graft, average peak velocity (APV) was significantly faster in Group I than that in Group II (18.2 ± 6.8 vs. 7.8 ± 3.9 cm/s, $p < 0.001$). In Group I, there was little difference in APV between SVG and ITA. However, in Group II, APV in SVG was significantly slower than that in ITA(6.3 ± 2.7 vs. 13.6 ± 0.5 cm/s, $p < 0.001$). In the native artery, APV in Group I was faster than that in Group II(23.9 ± 8.0 vs. 10.3 ± 3.6 cm/s, $p < 0.001$), but in each group there was no difference of APV between SVG and ITA. CFR value remained normal in both groups (Group I: 2.5 ± 0.7 vs. Group II: 2.6 ± 0.6, NS). (Conclusions) SVG to the small perfusion area is disadvantageous to the late graft patency because of slower graft flow velocity, and in such cases the arterial graft should be used. However, there was little effect of the graft material in the case of grafting to the large perfusion area. The CFR was kept in normal value without any effects of perfusion area and graft material.

980-80 Influence of Appendectomy by Maze Procedure on the Atrial Natriuretic Peptide (ANP) Secretion and Body Fluid Retention

Fumiki Yoshihara, Toshio Nishikimi, Yoshio Kosakai, Fumitaka Isobe, Yoshihiko Saito, Kenji Kangawa, Hisayuki Matsuo, Hiroaki Matsuoka, Shuichi Takishita, Yasunaru Kawashima. *National Cardiovascular Center, Suita, Osaka, Japan*

The maze procedure including appendectomy, effectively restores atrial fibrillation to sinus rhythm. However, one of the problems of this procedure is significant fluid retention during the early postoperative period. To investigate the influence of appendectomy by maze procedure on ANP secretion and fluid retention, we measured plasma levels of ANP during the pre- and postoperative periods. We also measured plasma levels of brain natriuretic peptide (BNP) and total amount of furosemide and dopamine used during the postoperative periods. In cases with open heart surgery, 15 patients underwent the maze procedure (MAZE Group) and 9 patients did not (Non-MAZE Group). Blood samples were obtained before, 4 hours, 1, 3, 7 and 21 days after the operation. Plasma ANP levels at 3 days after the operation were significantly higher than at 4 hours after the operation in the both groups (Figure 1). However, plasma ANP levels were significantly lower in the MAZE group than in the Non-MAZE group. Total amount of furosemide





TUESDAY POSTER